

Application No.: 10/626972  
Docket No.: CH2832USDIV

Page 4

### REMARKS

#### Amendments to the Claims

Claims 13-28 are pending herein. Applicants have amended Claims 13, 19, and 28. Applicants have canceled Claims 15-18, and Claim 25.

Applicants have amended Claim 13 to limit this claim to a process comprising heating a perfluoropolyether secondary iodide. Applicants have further amended this claim to specify a temperature at or above 220°C. Support can be found at page 5, lines 17-20.

Applicants have amended Claim 19 to specify the metal bromide or metal iodide is selected from the group consisting of lithium, calcium, barium, aluminum, boron, and combinations of two or more thereof mixed metal bromides, mixed metal iodides, or combinations thereof. Support for this amendment can be found at page 5, lines 13-17; page 6, lines 16-18; and in original Claim 16. Applicants further amend Claim 19 to recite the contacting step is performed at a temperature at or above 220°C. Support can be found on page 6, lines 16-18.

Applicants have amended claim 28 to recite as an independent claim in which a perfluoropolyether primary iodide is contacted with carbon tetrabromide at a temperature at or above about 180°C to produce a perfluoropolyether primary bromide. Support can be found on page 5, lines 17-18; on page 6, lines 12-15; and on page 9, Example 7, lines 14-24.

#### Claim Objections

Claim 28 has been objected to because of informalities – it is written as a dependent claim yet recites no claim number on which it depends. Applicant has amended Claim 28 to correct this error by making Claim 28 an independent claim.

#### Claim Rejections – 35 U.S.C. §103

Claims 1-27 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al. (U.S. Patent 5,288,376, hereinafter, "Oyama") in view of Fukaya et al. (Journal of Fluorine Chemistry, 83, 1997, pp. 117-123, hereinafter, "Fukaya"). Applicant respectfully points out that Claims 1-12 have been canceled by Applicant in Preliminary Amendment dated July 24, 2003. Thus, Claims 13-28 are pending herein.

Applicants agree with Examiner that Applicants claim a process comprising (1) contacting a perfluoropolyether acid fluoride with a metal bromide or metal iodide or (2) heating a perfluoropolyether secondary halide to effect production of a perfluoropolyether comprising at least one bromine or iodine in the primary position of one or more end groups of the polyether. Claim 13 has been amended to specify only process (2) whereas Claim 19 has been amended to specify only process (1).

#### Claims 13-18

Claim 13 has been amended. Claims 15-18 have been canceled.

Applicants respectfully assert that neither Oyama nor Fukaya teach or suggest a process to prepare a primary iodide from a secondary iodide. Applicants further respectfully assert that neither Oyama nor Fukaya teach or suggest heating a secondary iodide at a temperature at or above 220°C to produce a primary iodide. Therefore, Applicants

Application No.: 10/626972  
Docket No.: CH2832USDIV

Page 5

respectfully assert amended Claim 13 and dependent Claim 14 are patentable over Oyama in view of Fukaya.

#### Claims 19-27

Claim 19 has been amended. Claim 25 has been canceled.

Applicants agree with Examiner that Oyama teaches to prepare secondary perfluoropolyether iodides by contacting a perfluoropolyether acid fluoride with a metal iodide. Applicants further note that this process is illustrated in by Applicants in Example 1, Step 1. Thus, the expected product, based on Oyama, as further illustrated by Applicants, of the reaction of a perfluoropolyether acid fluoride with a metal iodide is a secondary iodide.

Applicants further agree with Examiner that Fukaya teaches a process to prepare a primary iodide. However, Applicants disagree that Fukaya teaches a process to prepare a perfluoropolyether iodide. A "poly-ether" is a compound containing more than one ether oxygen in the chain. General procedure 3.17 discloses preparation of a compound having the formula,  $\text{CF}_3\text{CF}_2\text{CF}_2\text{-O-CF}_2\text{CF}_2\text{-I}$ . In this compound, there is only one ether oxygen (as designated by bold underlining). Thus, Fukaya fails to disclose a perfluoropolyether comprising a primary bromide or iodide.

Applicants further respectfully direct Examiner to Applicants' Example 1 in Applicants' specification at page 6, line 27 bridging to page 7, line 9. Therein, Applicants illustrate preparation of a secondary iodide by reaction of the acid fluoride, KRYTOX Acid Fluoride, with lithium iodide at  $180^\circ\text{C}$  for 15 hours. Applicants further illustrate reaction of the secondary iodide to  $220^\circ\text{C}$  produced a primary iodide.

Therefore, Applicants respectfully assert reaction of a polyether with a metal iodide differs from reaction of a monoether with lithium iodide (as disclosed by Fukaya). Higher temperature than  $180^\circ\text{C}$  provides the primary iodide of a perfluoropolyether. Applicants further respectfully direct Examiner to Applicants' Example 2, in which perfluoropolyether acid fluoride is converted to perfluoropolyether primary iodide at a temperature of  $220^\circ\text{C}$ . (See also, Applicants' Examples 3 and 4, for conversions to perfluoropolyether primary iodides using alternative metal iodides than lithium iodide and Applicants' Example 6, step 2, for preparation of a perfluoropolyether primary bromide.

Neither Oyama nor Fukaya teach or suggest preparation of a perfluoropolyether primary iodide or bromide. Neither Oyama nor Fukaya teach or suggest reaction of selected metal iodides or metal bromides or combinations thereof to produce a perfluoropolyether primary iodide or bromide by reaction of said metal iodide and/or bromide with a perfluoropolyether acid fluoride at temperatures of  $220^\circ\text{C}$  or higher.

Applicants respectfully assert the process of Claims 19-27 is neither anticipated nor made obvious to one having ordinary skill in the art over Oyama in view of Fukaya and thus the claims are patentable.

#### Claim 28

Claim 28 has been amended to recite as an independent claim.

Applicants respectfully assert that neither Oyama nor Fukaya teach or suggest preparation of a perfluoropolyether primary bromide from a perfluoropolyether primary iodide by reaction of the primary iodide with carbon tetrabromide at a temperature at or above about  $180^\circ\text{C}$ . Therefore Applicants' Claim 28 is neither anticipated nor made obvious to one having ordinary skill in the art over Oyama in view of Fukaya and Claim 28 is therefore patentable.

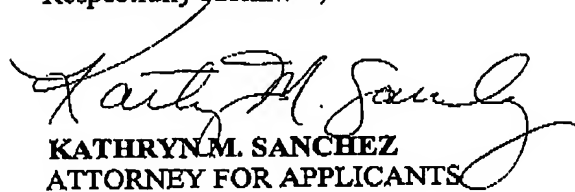
Application No.: 10/626972  
Docket No.: CH2832USDIV

Page 6

Conclusion

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



**KATHRYN M. SANCHEZ**  
ATTORNEY FOR APPLICANTS

Registration No.: 43,081

Telephone: (302) 992-2025

Facsimile: (302) 892-7925

Dated: June 21, 2006